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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the display with a printer which equipped with the printer the display which are indicating equipments, such as a personal computer and a word processor.

[0002]

[Description of the Prior Art] When a personal computer, a word processor, etc. were used as a personal youth, the printer which is the display and output unit which are an indicating equipment was installed on each people's desk in many cases, and a big area for installation was needed. Therefore, recently, the product which miniaturized these displays and a printer is developed, especially about a display, the thing of the conventional Braun tube is replaced and the display of a flat form using a liquid crystal display panel with little depth or a PDP display panel is beginning to spread.

[0003]

[Problem(s) to be Solved by the Invention] However, even if it was the display of a flat form, in order to hold the display screen in predetermined height, the leg is prepared towards the desk top from the center section of the tooth back of the display screen, and useless space had occurred between right and left of this leg, and the frame of the display screen and a desk top face. Moreover, when installing on a desk, since it compared with the display and arranged, both needed each installation area and a big installation area was required for the printer of an output unit as well as before, although the size itself was becoming small.

[0004]

[Means for Solving the Problem] As a means to solve the above technical problem, the display with a printer of this invention has the printing section which prints behind a display with a wrap frame for the regions of back of a display and a display while carrying out feed conveyance of the form, and has a form discharge guide means to guide the form conveyed by the frame from the printing section to an eject direction.

[0005]

[Embodiment of the Invention] A drawing is explained to reference for the gestalt of implementation of this invention below.

(Gestalt of the 1st operation) The configuration of the 1st display with a printer of the gestalt of operation is explained. Drawing 1 is the appearance perspective view showing the display with a printer of the 1st of the gestalt of operation of this invention (it is henceforth described as a display).

[0006] The display 1 is equipped with the display section 2, the printing section 3 arranged to the tooth-back side of the display section 2, and the stacker section 4 which accumulates and supports the print sheet discharged after printing in drawing 1.

[0007] Drawing 2 is a sectional view explaining the configuration of the display of the 1st of the gestalt of operation of this invention, and looks at what cut mostly perpendicularly the display 1 expressed with the appearance perspective view of drawing 1 in the center from right-hand side.

[0008] The form cassette 6 which stored the form 5 in the printing section 3, and has been arranged

almost in parallel with the display screen of the display section 2 in drawing 2 , The feed roller 7 which feeds paper to a form 5 from the form cassette 6, and the resist roller 8 which the tip of the form 5 to which paper was fed is aligned, and is conveyed, It has the platen 10 and pinch roller 11 which convey the form which aligned with the resist roller 8 to the print head section 9, and the feed roller 12 which conveys the form 5 printed in the print head section 9 with a platen 10 in the display section 2. Furthermore, the printing section 3 is equipped with the feed guide 13 which guides the form 5 conveyed with the above-mentioned rollers to the print head section 9, the conveyance guide 14 which guides the form after printing, and the form detection sensors 15 and 16 which detect whether the form 5 is conveyed normally. With the form conveyance means and the above-mentioned form guide of the above-mentioned rollers, the printing section 3 carried out feed conveyance of the form 5 towards the anterior part lower part from the posterior part upper part of equipment, after printing in the print head section 9 arranged in the anterior part lower part of equipment, it turns a form to the posterior part upper part of equipment, conveys it, and has adopted the form conveyance way of an abbreviation J typeface. Moreover, the print head section 9 which prints toward the slanting upper part from an outside at the pars basilaris ossis occipitalis of the form conveyance way of this abbreviation J typeface is arranged. By having arranged the form conveyance way and the print head section 9 of these J typeface in the lower part of equipment anterior part, the tooth space of the lower part of the display section 2 is used further effectively, without enlarging depth of equipment. In addition, with the gestalt of the 1st operation, the thermal print head which carried the ink ribbon can be used for the print head section 9.

[0009] The display section 2 is equipped [the periphery of the display 17 equipped with the driver section which emits light in a liquid crystal display panel and a liquid crystal display panel, and a display 17] with the wrap display tooth-back frame 19 for the front-face frame 18 of a wrap display, and the tooth back of a display 17. The form discharge guide 20 which guides the form 5 after printing to the display tooth-back frame 19 in an eject direction, Discharge roller pair 21a which rotates while pressing mutually, in order to discharge the form which has been arranged on the form discharge guide 20 and conveyed along with the form discharge guide 20 out of the printing section 3, and 21b, It has the stacker section 4 which accumulates the form which has been arranged almost in parallel with a display 17, and was conveyed by discharge roller pair 21a and 21b.

[0010] Next, the configuration of the form discharge guide 20 is explained. The form discharge guide point 22 which guides first the form conveyed from the printing section 3 is arranged below the appearance which does not prevent conveyance of a form 5 from the printing section 3 to the form 5 conveyed toward the tangential direction of a platen 10 and a feed roller 12, and this tangent. The configuration of the form discharge guide 20 from the form discharge guide point 22 to discharge roller pair 21a and 21b narrows the form conveyance way which the form 5 conveyed in the tangential direction of a platen 10 and a feed roller 12 is incurvated so that it may be gradually connected with the tangent of discharge roller pair 21a and 21b with a derrick down at the stacker section 4 side, and is formed with the conveyance guide 14 of the printing section 3 as it approaches the pinching section of discharge roller pair 21a and 21b. In addition, when the location of discharge roller pair 21a arranged on the form discharge guide 20 and 21b conveys the form of the shortest length used in the printing section 3 along with the form discharge guide 20, before the termination of the form of the shortest length separates from it from the pinching section of a platen 10 and a feed roller 12, it is arranged in the location which can pinch a tip. Moreover, specified quantity elutriation ***** of the discharge roller 21a is carried out from the form discharge guide 20 in the roller front face in the slot 23 established in the display tooth-back frame 19. After extending the configuration of the form discharge guide 20 from discharge roller 21a to the form discharge guide trailer 24 which is the termination of the form discharge guide 20 to the tangential direction of the discharge roller 19, it is curving gently-sloping so that the form supporter 25 of the stacker section 4 arranged almost in parallel with the display 17 of the display section 2 may be approached.

[0011] The stacker section 4 is equipped with the form accumulation section 26 equipped with the field mostly bent at the right angle to the form supporter 25 at the form supporter 25 and the lower limit section of the form supporter 25. The form supporter 25 is arranged almost in parallel with a display as

above-mentioned, and it supports the form 5 discharged from discharge roller pair 21a and 21b while it guides the form 5 under conveyance by discharge roller pair 21a and 21b. Although the form accumulation section 26 accumulates the termination of the form 5 discharged from discharge roller pair 21a and 21b The arrangement in order for the form discharged from discharge roller pair 21a and 21b to prevent continuing riding on a discharge roller side Discharge roller pair 21a, It is lower than the top face of 21b, and in order to prevent that the termination of the accumulated form 5 is again involved in discharge roller pair 21a and 21b, it is considering as the location higher than the line which connects each center of rotation of discharge roller pair 21a and 21b.

[0012] If the termination of a form 5 separates from discharge roller pair 21a and 21b, being guided to the form discharge guide 20 which was explained above after the form 5 conveyed by the platen 10 and feed roller 12 of the printing section 3 is conveyed up by discharge roller pair 21a and 21b along with the form supporter 25 of the stacker section 4, it will be fallen and accumulated on the form accumulation section 26.

[0013] Drawing 3 is a perspective view explaining the tooth back of the display section 2 of the display of the 1st of the gestalt of operation of this invention.

[0014] The form discharge guide 20 prepared in the display tooth-back frame 19 of the tooth back of the display section 2 in drawing 3 is coating **** with a fluororesin about a front face while making all the edge sections into a curved surface so that the edge of a presser-foot form may not be low caught in friction with the form discharged. It is supported by physical relationship which is rotated while discharge roller pair 21a and 21b press mutually by the bearing 30 fixed to the discharge roller shaft supporter 29 with which the follower side discharge roller shaft 27 which equipped with discharge roller 21a the location explained by drawing 2 on the form delivery guide 20, and the driving-side discharge roller shaft 28 equipped with discharge roller 21b were fixed to the display tooth-back frame 19, and the discharge roller shaft supporter 29. The driving-side discharge roller shaft 28 has extended the shaft part of both ends in the direction of an outside [supporter / 29 / discharge roller shaft], and has equipped with the belt pulley 31 for obtaining a drive through the driving source and belt which are not illustrated to one side. Moreover, the discharge roller shaft supporter 29 is equipped with the engagement hole 33 for fixing the susceptor 32 and the stacker section 4 for supporting the form accumulation section 26 of the stacker section 4. 34 is an electrical installation code for connecting the display 17 of drawing 2 , and the power supply section which prepared in the printing section 3.

[0015] The form accumulation section 26 of the stacker section 4 is the shape of toothing which escaped from discharge roller 21b. Moreover, the rear face of the form supporter 25 of the stacker section 4 is equipped with the engagement pawl 35 for engaging with the engagement hole 33 of the discharge roller shaft supporter 29, and fixing the stacker section 4 to the display section 2.

[0016] Drawing 4 is an important section perspective view explaining the configuration for equipping the printing section 3 with the display section 2 of the display of the 1st of the gestalt of operation of this invention. in addition, wearing in the printing section 3 of the display section 2 -- right and left -- on the other hand, drawing 4 shows only an edge for the same gestalt.

[0017] In drawing 4 , 36 is joint which combines the display section 2 and the printing section 3. Joint 36 is equipped with the display frame fixed supporter 37 which carries out fixed support of the display frame 18 and the display tooth-back frame 19 of the display section 2, and the boss section 40 which inserts in the notching section 39 prepared in the position of the chassis 38 of the printing section 3, and carries out rotation support of the joint 36. The key seat 42 which inserts each other in the display frame fixed supporter 37 of joint 36 with the key section 41 prepared in the display frame 18 and the display tooth-back frame 19, and fixes the display section 2 is formed. Two stoppers 43 are formed in the periphery section of the boss section 40 at intervals of the include angle alpha. This include angle alpha is set up at the include angle applied about 10 degrees to the include angle beta which specifies the notching range of the notch 39 of the chassis 38 in which the boss section 40 is inserted. For example, alpha may be 200 degrees when beta is formed at 190 degrees. In addition, the include angle beta which specifies the notching range of the notching section 39 is required 181 degrees or more, in order to support the boss section 39, but since the driving-side discharge roller shaft 28 is inserted from opening

of the notching section 39, let it be the range which can do opening more than the diameter of a shaft of the driving-side discharge roller shaft 28 at least. Moreover, the tilt angle of the display section 2 which the display fixed supporter 37 at the time of the lower part side of the stopper of the edge section by the side of the lower part of the notching section 39 and the boss section hitting holds has determined the location of the edge section by the side of the lower part of the notching section 39, and the location of the stopper 43 of the boss section 40 so that it may become the relation of the display section 2 and the printing section 3 which were shown by drawing 2 . Furthermore, coating of the periphery section of the boss section 40 is carried out by the resin of high friction material, and the hole 44 formed with the dimension which supports the driving-side discharge roller shaft 28 free [rotation] in an axial center is formed.

[0018] After wearing with the display section 2 and the printing section 3 inserts the driving-side discharge roller shaft 28 of the display section 2 in opening of the notching section 39 of a chassis 38 from the front in the direction shown by the arrow head A of drawing 4 , While inserting so that the key section 41 of the display section 2 and the own key section 42 may suit the display frame fixed supporter 37 in the direction which shows joint 36 by the arrow head B from the outside of a chassis 38 The edge of the driving-side discharge roller shaft 28 is inserted in the hole 44 of the boss section 40, and the display section 2 is equipped with the printing section 3. In addition, in drawing 4 , although not illustrated, the driving-side discharge roller shaft 28 equipped the shaft part which penetrated the hole 44 with the omission snap rings, such as a ring E, and has prevented that of a blank from the hole 44 of joint 36. Although the display section 2 and the printing section 3 are combined by joint 36 as mentioned above, the boss section 40 of joint 36 and the notching section 39 of the printing section 3 can be rotated at the include angle of about 10 degrees of the range where two stoppers 43 contact the edge of the notching section 39. Moreover, since coating of the periphery section of the boss section 40 of joint 36 is carried out by the resin of high friction material, high frictional force arises between the notching sections 39 of the printing section 3, and it is the above-mentioned pivotable range and can hold the display section 2 at a predetermined include angle.

[0019] Drawing 5 is a sectional view explaining discharge actuation of the form 5 at the time of equipping with the display section 2 of the display of the 1st of the gestalt of operation of this invention free [rotation] at a predetermined include angle to the printing section 3. In addition, since form conveyance actuation in the printing section of this equipment is equivalent to what was explained by drawing 2 , it omits explanation.

[0020] In drawing 5 , the display section 2 rotates between the location shown with an alternate long and short dash line, and the locations shown as a continuous line focusing on the axial center 45 of the driving-side discharge roller shaft 28, as drawing 4 explained. In addition, the location shown with an alternate long and short dash line is a location explained by drawing 2 . The form 5 printed in the print head section 9 turns to the tangential direction of a platen 10 and a feed roller 12, and is conveyed. The form discharge guide 20 of the display section 2 rotates to the conveyance direction of this form 5 in the direction of arrow-head C which estranges the form discharge guide point 22 caudad to the tangential direction of a platen 10 and a feed roller 12. Therefore, the tip of the form 5 conveyed by platen 10 feed roller 12 can be conveyed, without checking a form traveling route. Furthermore, even if the mutual physical relationship of each configuration member which discharges a form in the display section 2 by having equipped with discharge roller pair 21a which is a form conveyance means, 21b, and the stacker section 4 rotates the display section 2 to the printing section 3, it does not change. Therefore, form conveyance capacity even if it rotates the display section 2 in the predetermined range to the printing section 3, until it discharges the form conveyed from the printing section does not decline, it is pinching section made to be the same as for drawing 2 to have explained in discharge roller pair 21a and 21b, being guided with the form discharge guide 20, and discharge accumulation of the form 5 is carried out by discharge roller pair 21a and 21b after that at the stacker section 4. Furthermore, it writes as the axial center 45 of the driving-side discharge roller shaft 28 which equipped the display section 2 with the center of rotation of the display section 2 and the printing section 3, and even if the distance of the driving source with which the printing section was equipped, and the axial center 45 of the driving-side

discharge roller shaft 28 rotates the display section 2 to the printing section 3, it does not need to change, and it does not need to take into consideration the drive transfer root by rotation. In addition, with the gestalt of the 1st operation, although the rotation range of the display section was made into 10 degrees, this value is set up as a suitable include angle to adjust the display of the practical display section legible, and this rotation range does not restrict invention at all.

[0021] It enables it to adjust the include angle of the display section 2 as mentioned above by having made the display section 2 pivotable in the predetermined range to the printing section 3, without [without it lowers the discharge capacity of a form according to the gestalt of the 1st operation, and] taking into consideration the transfer path which transmits the driving force for discharging a form.

[0022] (Gestalt of the 2nd operation) The configuration of the 2nd flat display of the gestalt of operation is explained.

[0023] The fundamental configuration of this equipment is equivalent to the gestalt of the 1st operation, and having established a migration means by which the above-mentioned display frame section moved the display section up and down along with the form guide frame section in the periphery and tooth back of a display while dividing the wrap plate-like display frame section and a form discharge guide into the form guide frame section which it had differs from the gestalt of the 1st operation. Therefore, the sign same about the same configuration member as the gestalt of the 1st operation is attached, and explanation is omitted.

[0024] Drawing 6 is a perspective view explaining the tooth back of the display section of the display of the 2nd of the gestalt of operation of this invention.

[0025] The display section 46 is equipped with the form guide frame section 48 equipped with the wrap display frame section 47 and the form discharge guide 20 for the periphery of the display 17 of drawing 2 , and regions of back in drawing 6 .

[0026] The display frame section 47 is equipped with the front-face frame 18 of a display, and the display tooth-back frame 49. The display tooth-back frame 49 had the pore 52 to the gear plate 51 which equipped the center section with two pinion gears 50 which attached the flange at one side, and longitudinal direction both ends, and equips the pore 52 with the display stopper 54 which has the engagement pawl 53.

[0027] The form guide frame section 48 which equips with the display frame section 47 on the other hand is equipped with the engagement hole 57 which engages with the display stopper's 54 engagement pawl 53 perpendicularly arranged at the predetermined spacing to the rack slot 56 and longitudinal direction both ends of T mold which equipped the tooth back of the form discharge guide 20 of the guide frame 55 which has the form discharge guide 20, and a guide frame 55 with the rack which gears with the pinion gear 50 of the display frame section 47, respectively.

[0028] Although the rack slot 56 of the form guide frame section 48 gears and the pinion gear 50 of the display frame section 47 moves in the guide frame 55 top of the form guide frame section 48, the display frame section 47 Bearing injury press fit of the high friction material which makes a pinion gear 50 generate comparatively high frictional force between the gear shafts fixed to the gear plate 51 which is supporting the pinion gear 50 is carried out. Therefore, it has prevented that the display frame section 47 moves rapidly along with a guide frame 55. Moreover, the pinion gear 50 has prevented that the form guide frame section 48 and the display frame section 47 separate by a part for a flange and the rack slot 56 on own.

[0029] Drawing 7 and drawing 8 are the sectional views explaining actuation of the display stopper of the display of the 2nd of the gestalt of operation of this invention, drawing 7 and drawing 8 look at what cut the thing on the left-hand side of the display screen stopper 54 perpendicularly to the display tooth-back frame 49 from the upper part, drawing 7 shows the condition before the display stopper's 54 engagement pawl 53 and the engagement hole 56 of a guide frame 55 are engaged, and drawing 8 shows the condition after being engaged.

[0030] While the guidance about the leg 58 is given to the display stopper 54 by the side attachment wall 59 and rib 60 of the display tooth-back frame 49 in drawing 7 and drawing 8 , it is equipped in the condition of it having been pushed up by the coil spring 63 with which the spring base 61 and the own

display stopper spring base 62 which were established in the front-face frame 18 of a display were equipped, and having been embedded on the display frame 48. Therefore, the display stopper 54 always has thrust upward in drawing 7 and drawing 8 . In addition, it is held, while the spring base 61 of the front-face frame section 18 of a display and the display screen stopper spring base 62 are carrying out the shape of a cylindrical shape of a path slightly smaller than the bore of a coil spring and a coil spring 63 gets into a these cylindrical shape-like spring base, and it does not separate.

[0031] In drawing 7 , an operator meets and moves the display frame section 47 to the form guide frame section 48 to a suitable location while pushing the display stopper 54 formed in the display frame section 47 with the finger in the thickness direction of the display frame section 47 from the outside of the display frame section 47.

[0032] Next, if it stops pushing the display screen stopper 54 after an operator makes it move as shown in drawing 8 , adjusting to the location whose engagement pawl 53 of the display screen stopper 54 suits to the engagement hole 57 of a guide frame 55, the display stopper 54 can return, the engagement pawl 53 and the engagement hole 57 of a guide frame 55 can be engaged, and the display frame section 47 can be held to the form guide frame section 48. As explained above, with the gestalt of the 2nd operation, the height of the display section other than adjustment of the display section by rotation of the gestalt 1 of the 1st operation can be adjusted by having made the display section movable in the vertical direction. Furthermore, the form 5 printed from the front of equipment is made easy to take out by moving the display frame section 47 downward, also in case the form 5 discharged in the stacker section 4 is taken out.

[0033]

[Effect of the Invention] As explained above, the display of this invention By having had the printing section which prints behind a display with a wrap frame for the regions of back of a display and a display while carrying out feed conveyance of the form, and having had a form discharge guide means to guide the form conveyed by the frame from the printing section to an eject direction While using effectively the leg circumference of the conventional flat form display section as a printer Where a platte form display and a printer are stuck, are connectable. In case a personal computer and a word processor are used as a personal youth, without enlarging depth of the conventional platte form display, it enables it to install these equipments in a small area.

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PATENT ABSTRACTS OF JAPAN

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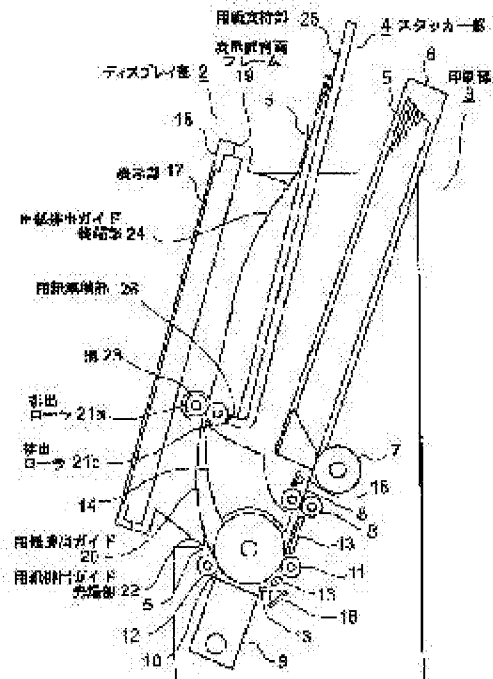
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(54) DISPLAY WITH PRINTER

(57)Abstract:

PROBLEM TO BE SOLVED: To mount a printing part in a close contact state to a display part and provide a display with a printer of a small installation area by utilizing a rear face of the display part as a paper delivery guide of the printing part.

SOLUTION: A printing part 3 is set to the back of a display part 2 having a display part 17 and a display part rear frame 19 for covering a rear face of the display part. A paper delivery guide 20 for guiding a paper transferred after printed from the printing part 3 is set to the display part rear frame 19.



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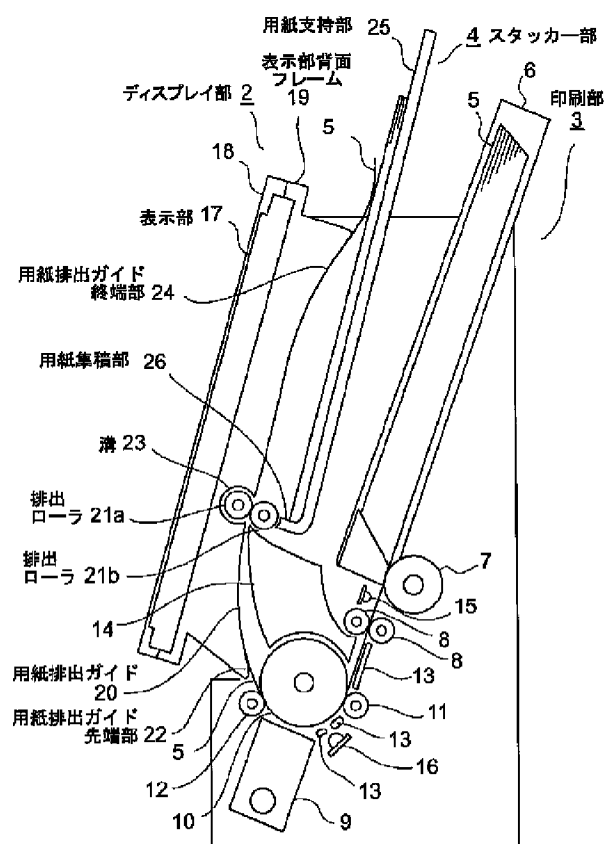
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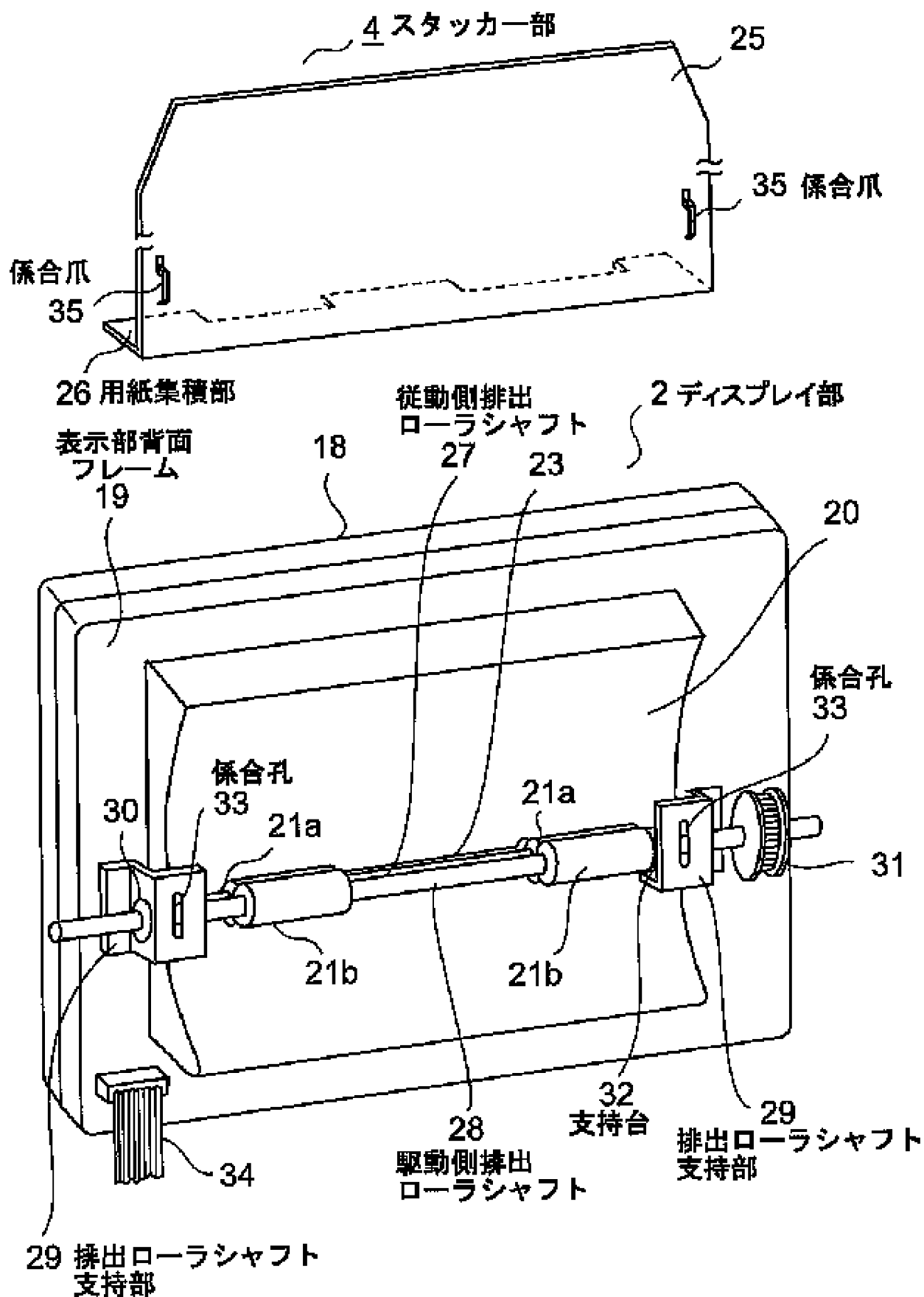
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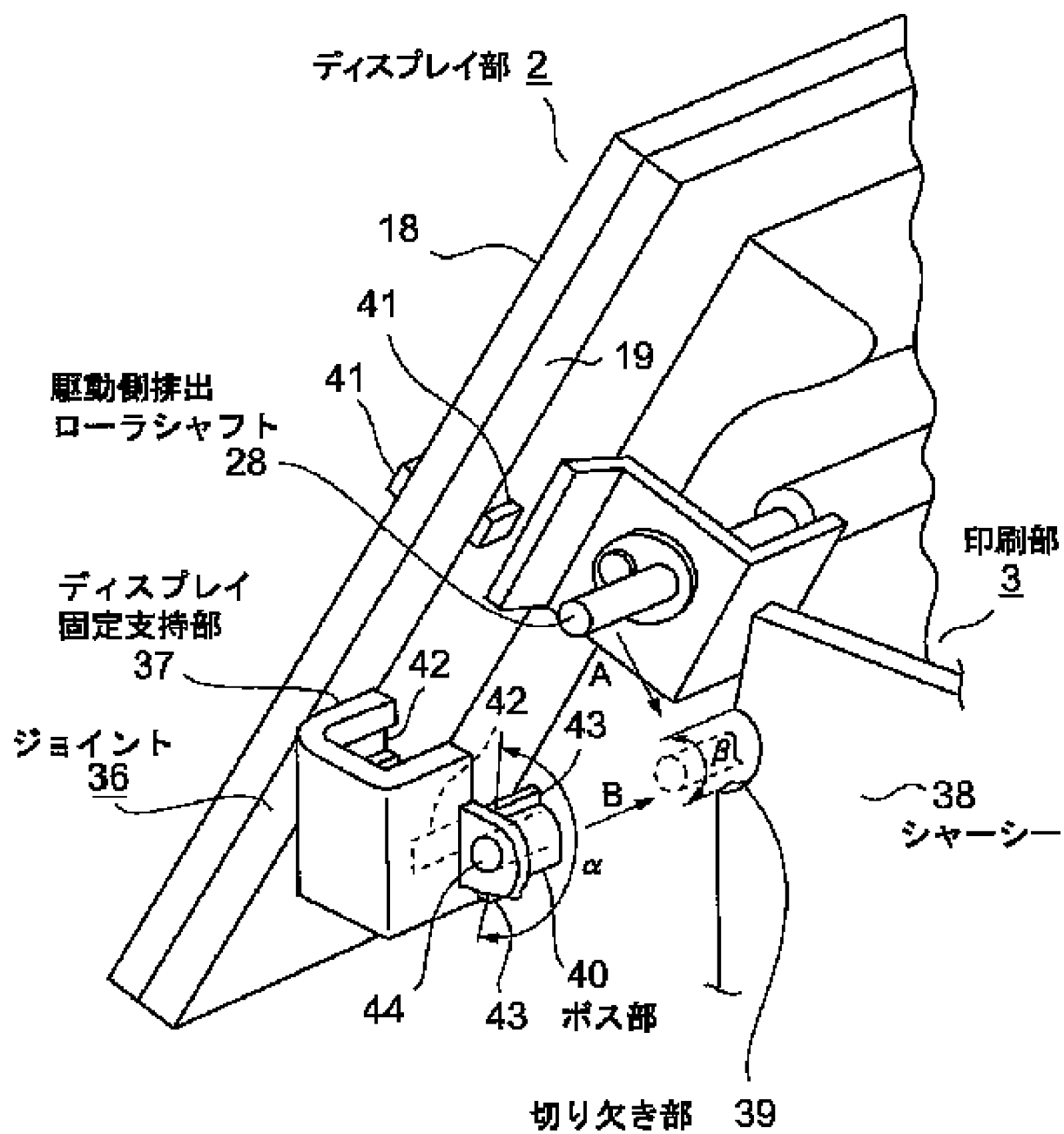
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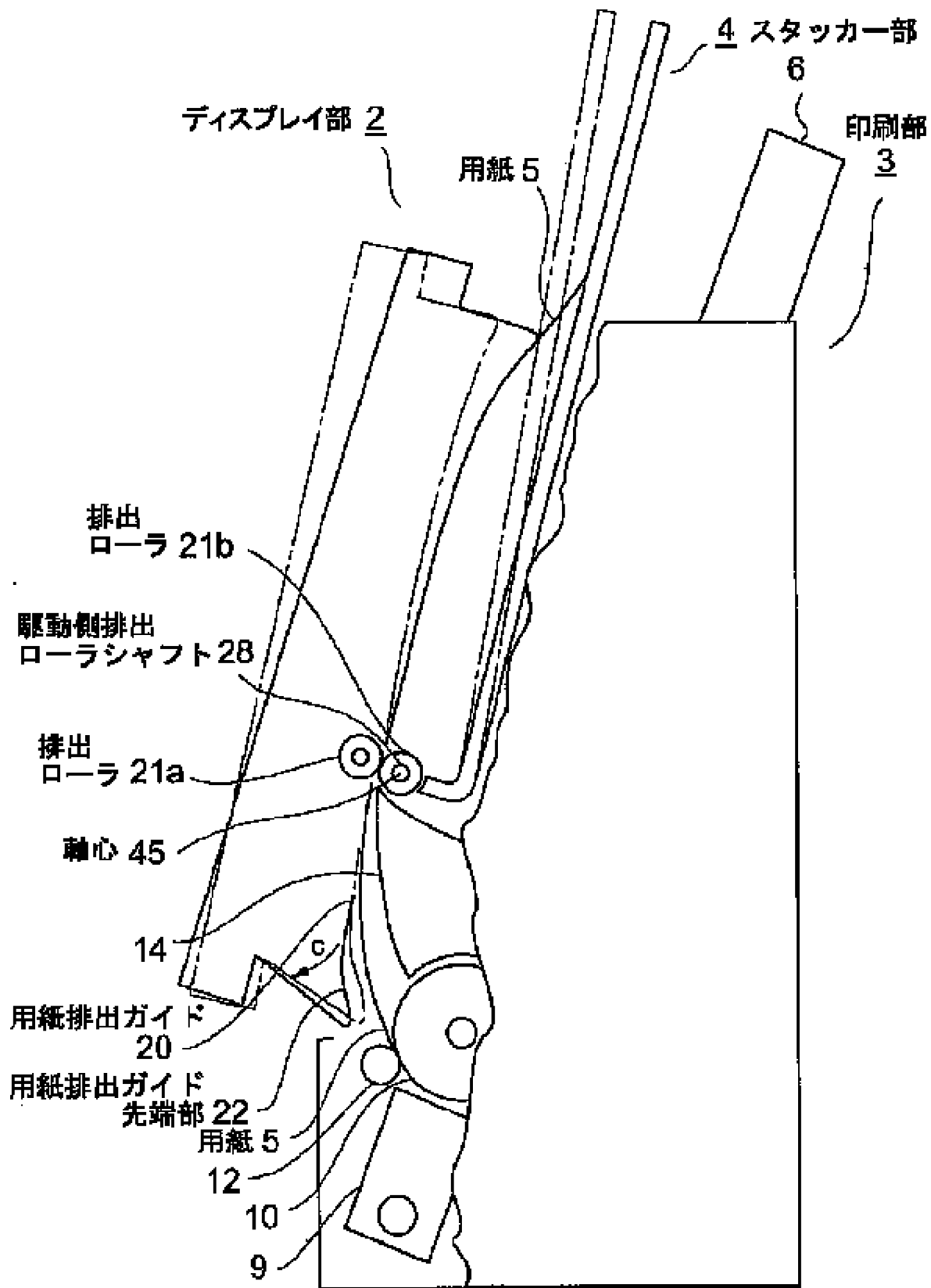
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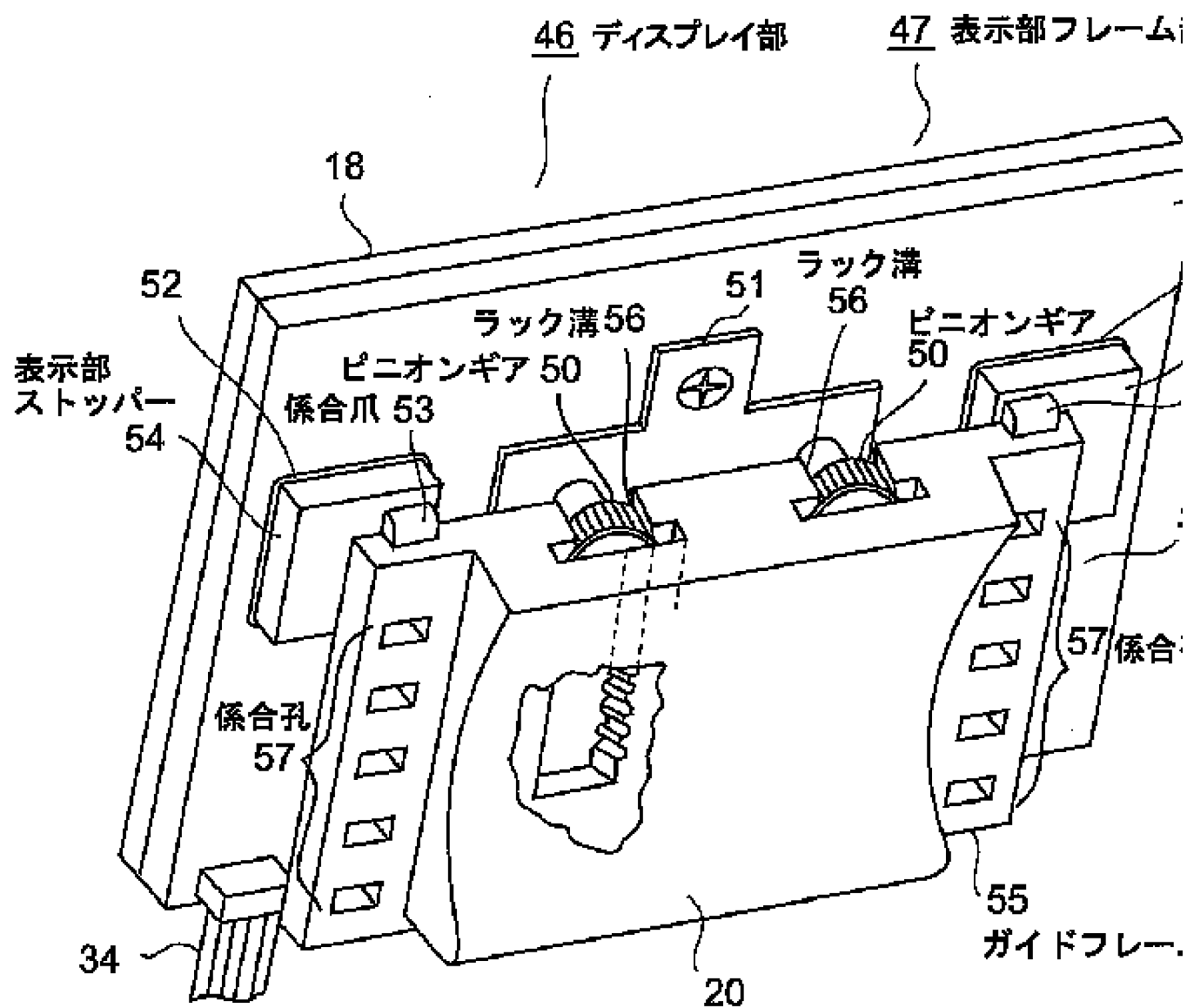
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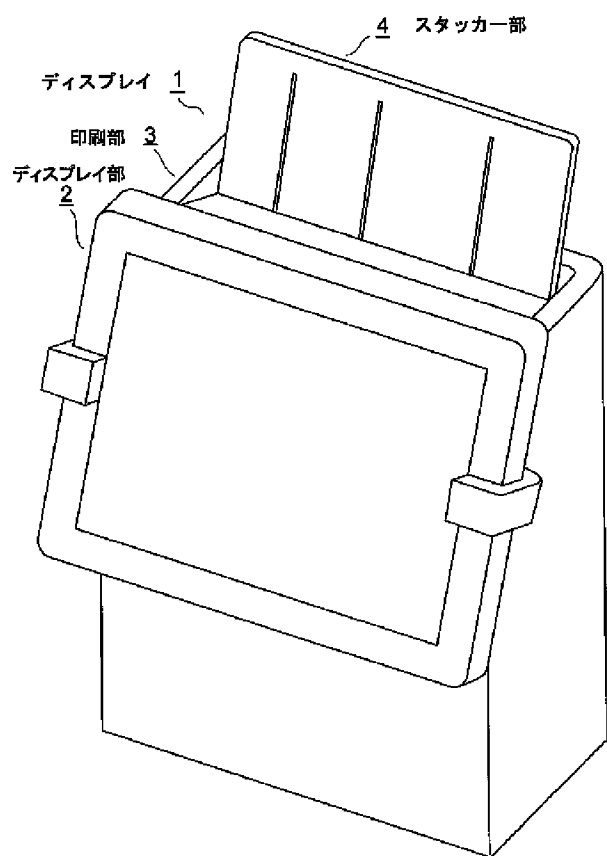
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